

What is claimed is:

1        1. An electrode array structure in a pixel area of an  
2 in-plane switching mode LCD (IPS-LCD), comprising:

3        a comb-shaped common electrode having a bar extending  
4 transversely and a plurality of rectangular teeth extending  
5 in a first lengthwise direction from the bar; and

6        a comb-shaped pixel electrode having a bar extending  
7 transversely and a plurality of teeth extending in a second  
8 lengthwise direction from the bar, wherein each tooth has a  
9 continuous  $\angle$ -shaped sidewall and parallel is disposed  
10 between adjacent teeth of the common electrode.

1        2. The electrode array structure according to claim 1,  
2 wherein each tooth of the pixel electrode is formed by  
3 lengthwise linking of a plurality of trapezoids.

1        3. The electrode array structure according to claim 2,  
2 wherein the short-based length  $D_1$  and the long-based length  
3  $D_2$  of the trapezoid satisfy the formula  $D_2 \leq |D_1 \pm 50\mu\text{m}|$ ,  
4 excluding the case that  $D_2 = D_1$ .

1        4. The electrode array structure according to claim 2,  
2 wherein two adjacent trapezoids are connected by a  
3 rectangular strip.

1        5. The electrode array structure according to claim 1,  
2 wherein each tooth of the pixel electrode is formed by  
3 lengthwise linking of a plurality of inverted trapezoids.

1        6. The electrode array structure according to claim 5,  
2 wherein the short-based length  $D_1$  and the long-based length  
3  $D_2$  of the inverted trapezoid satisfy the formula  $D_2 \leq |D_1 \pm 50\mu\text{m}|$ ,  
4 excluding the case that  $D_2 = D_1$ .

1        7. The electrode array structure according to claim 5,  
2 wherein two adjacent inverted trapezoids are connected by a  
3 rectangular strip.

1        8. The electrode array structure according to claim 1,  
2 wherein each tooth of the pixel electrode is indium tin oxide  
3 (ITO).

1        9. The electrode array structure according to claim 1,  
2 wherein each tooth of the pixel electrode comprises:  
3        a first electrode layer having a rectangular profile;  
4        a second electrode layer disposed over the first electrode  
5 layer and having a continuous  $\angle$ -shaped sidewall; and  
6        a protection layer sandwiched between the first electrode  
7 layer and the second electrode layer.

1        10. The electrode array structure according to claim 9,  
2 wherein the second electrode layer is indium tin oxide (ITO).

1        11. The electrode array structure according to claim 1,  
2 wherein each tooth of the pixel electrode comprises:  
3        a first electrode layer having a continuous  $\angle$ -shaped  
4 sidewall;  
5        a second electrode layer disposed over the first electrode  
6 layer and having a rectangular profile; and

7       a protection layer sandwiched between the first electrode  
8       layer and the second electrode layer.

1       12. The electrode array structure according to claim 11,  
2       wherein the second electrode layer is indium tin oxide (ITO).

1       13. An electrode array structure in a pixel area of an  
2       in-plane switching mode LCD (IPS-LCD), comprising:

3       a comb-shaped common electrode having a bar extending  
4       transversely and a plurality of teeth extending in a first  
5       lengthwise direction from the bar, wherein each tooth of the  
6       common electrode has a continuous  $\angle$ -shaped sidewall; and

7       a comb-shaped pixel electrode having a bar extending  
8       transversely and a plurality of rectangular-shaped teeth  
9       extending in a second lengthwise direction from the bar,  
10      wherein each tooth of the pixel electrode parallel is disposed  
11      between adjacent teeth of the common electrode.

1       14. The electrode array structure according to claim 13,  
2       wherein each tooth of the common electrode is formed by  
3       lengthwise linking of a plurality of trapezoids.

1       15. The electrode array structure according to claim 14,  
2       wherein the short-based length  $D_1$  and the long-based length  
3        $D_2$  of the trapezoid satisfy the formula  $D_2 \leq |D_1 \pm 50\mu\text{m}|$  ,  
4       excluding the case that  $D_2 = D_1$  .

1       16. The electrode array structure according to claim 14,  
2       wherein two adjacent trapezoids are connected by a  
3       rectangular strip.

1 17. The electrode array structure according to claim 13,  
2 wherein each tooth of the common electrode is formed by  
3 lengthwise linking of a plurality of inverted trapezoids.

1 18. The electrode array structure according to claim 17,  
2 wherein the short-based length  $D_1$  and the long-based length  
3  $D_2$  of the inverted trapezoid satisfy the formula  $D_2 \leq |D_1 \pm 50\mu\text{m}|$ ,  
4 excluding the case that  $D_2 = D_1$ .

1 19. The electrode array structure according to claim 17,  
2 wherein two adjacent inverted trapezoids are connected by a  
3 rectangular strip.

1 20. The electrode array structure according to claim 13,  
2 wherein each tooth of the common electrode is indium tin oxide  
3 (ITO).

1 21. The electrode array structure according to claim 13,  
2 wherein each tooth of the common electrode comprises:  
3 a first electrode layer having a rectangular profile;  
4 a second electrode layer disposed over the first electrode  
5 layer and having a continuous  $\angle$ -shaped sidewall; and  
6 a protection layer sandwiched between the first electrode  
7 layer and the second electrode layer.

1 22. The electrode array structure according to claim 21,  
2 wherein the second electrode layer is indium tin oxide (ITO).

1 23. The electrode array structure according to claim 13,  
2 wherein each tooth of the common electrode comprises:

3       a first electrode layer having continuous  $\angle$ -shaped  
4       sidewall;

5       a second electrode layer disposed over the first electrode  
6       layer and having a rectangular profile; and

7       a protection layer sandwiched between the first electrode  
8       layer and the second electrode layer.

1       24. The electrode array structure according to claim 23,  
2       wherein the second electrode layer is indium tin oxide (ITO).

1       25. An electrode array structure in a pixel area of an  
2       in-plane switching mode LCD (IPS-LCD), comprising:

3       a comb-shaped common electrode having a bar extending  
4       transversely and a plurality of teeth extending in a first  
5       lengthwise direction from the bar, wherein each tooth of the  
6       common electrode has a continuous  $\angle$ -shaped sidewall; and

7       a comb-shaped pixel electrode having a bar extending  
8       transversely and a plurality of teeth extending in a second  
9       lengthwise direction from the bar, wherein each tooth has a  
10      continuous  $\angle$ -shaped sidewall and parallel is disposed  
11      between adjacent teeth of the common electrode.

1       26. The electrode array structure according to claim 25,  
2       wherein each tooth of the common electrode is formed by  
3       lengthwise linking of a plurality of trapezoids, and each  
4       tooth of the pixel electrode is formed by lengthwise linking  
5       of a plurality of inverted trapezoids.

1       27. The electrode array structure according to claim 26,  
2       wherein the short-based length  $D_1$  and the long-based length

3  $D_2$  of the trapezoid satisfy the formula  $D_2 \leq |D_1 \pm 50\mu\text{m}|$ ,  
4 excluding the case that  $D_2 = D_1$ .

1 28. The electrode array structure according to claim 25,  
2 wherein two adjacent trapezoids are connected by a  
3 rectangular strip, and two adjacent inverted trapezoids are  
4 connected by a rectangular strip.

1 29. The electrode array structure according to claim 25,  
2 wherein each tooth of the common electrode is formed by  
3 lengthwise linking of a plurality of inverted trapezoids, and  
4 each tooth of the pixel electrode is formed by lengthwise  
5 linking of a plurality of trapezoids.

1 30. The electrode array structure according to claim 29,  
2 wherein the short-based length  $D_1$  and the long-based length  
3  $D_2$  of the trapezoid satisfy the formula  $D_2 \leq |D_1 \pm 50\mu\text{m}|$ ,  
4 excluding the case that  $D_2 = D_1$ .

1 31. The electrode array structure according to claim 29,  
2 wherein two adjacent trapezoids are connected by a  
3 rectangular strip, and two adjacent inverted trapezoids are  
4 connected by a rectangular strip.

1 32. The electrode array structure according to claim 25,  
2 wherein each tooth of the common electrode is indium tin oxide  
3 (ITO).

1 33. The electrode array structure according to claim 25,  
2 wherein each tooth of the pixel electrode is indium tin oxide

3 (ITO) .